Joint-Geospatial Enterprise Service ICD FDU/FEF

Presented to:
CATTMIC

21 Apr 2004

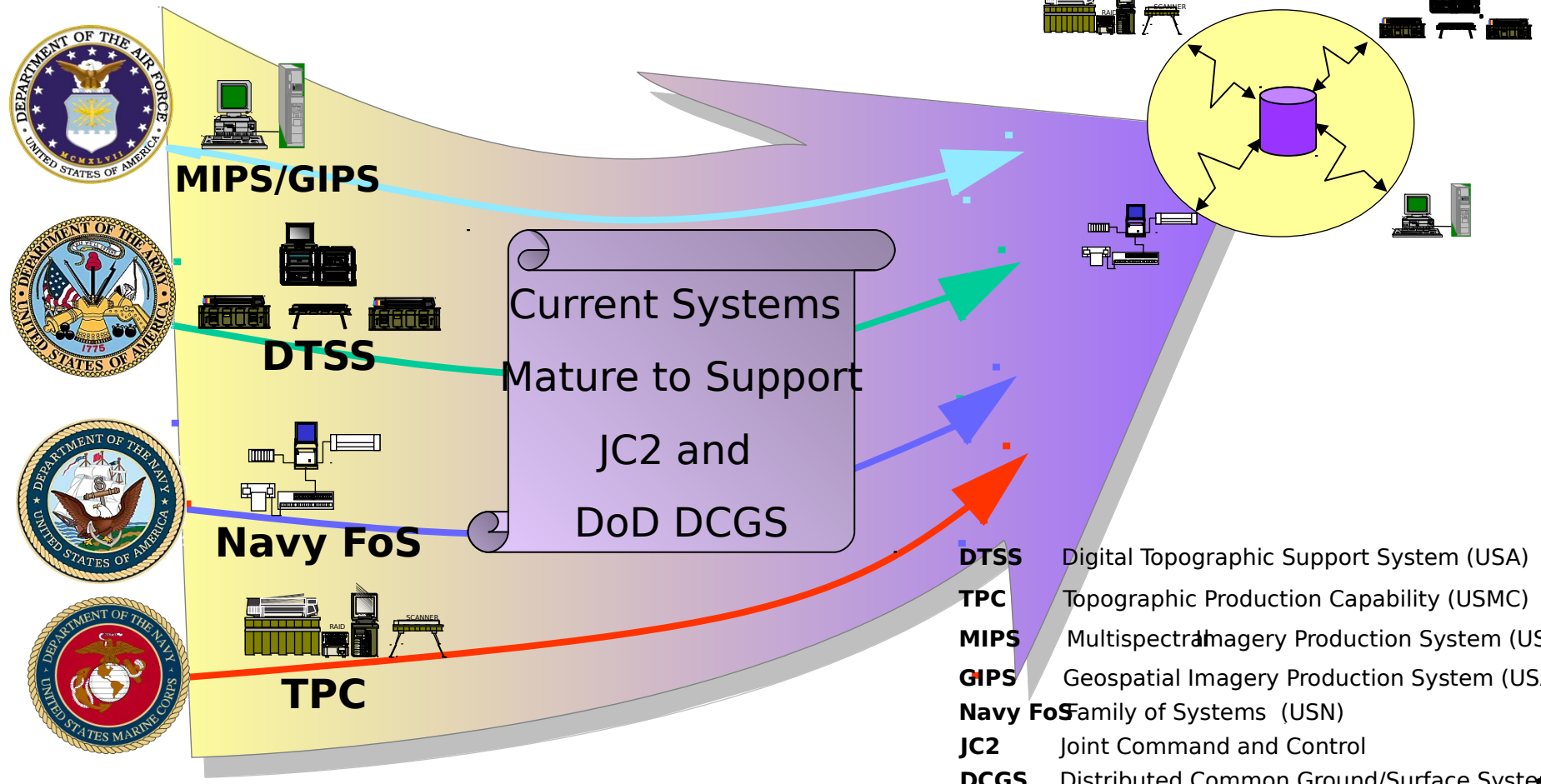
Presented by:
MAJ Kornuta

Mission

TVC, as the USAES geospatial proponent, supports current military operations, develops geospatial solutions for Doctrine, Organization Design, Training Development, Materiel Requirements Determination, Leadership Development, Personnel, and Facilities (DOTMLPF), exercises and experiments involving the JIM geospatial engineering community.

Purpose

To Inform the Army Geospatial Community
Of the status of the Joint Geospatial Enterprise Service ICD



DTSS Digital Topographic Support System (USA)
TPC Topographic Production Capability (USMC)
MIPS Multispectral Imagery Production System (USAF)
GIPS Geospatial Imagery Production System (USAF)
Navy FoS Family of Systems (USN)
JC2 Joint Command and Control
DCGS Distributed Common Ground/Surface System

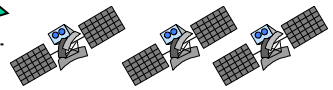
Focus on Rapid Refresh of Geospatial Data following NGA's Production

	Size/ Qty	Content	Initial Prod.*	Refresh**
Open	150x150 km	UP MSD 3 HRTe 3 Imagery – 1 meter	12 days	3 days
Complex	75x75 km	UP MSD 3 HRTe 3 Imagery – 1 meter	12 days	2 days
Urban	50x50 km 1	UP MSD 3 HRTe 3 Imagery – 1 meter	12 days	1 days

Delineation of NGA/JIM and Service, Theater-level Geospatial Support

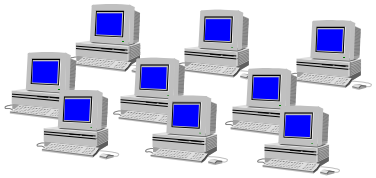
NGA/National/
Service-level
Geospatial
Assets

- Prior to Deployment -



- CIB 1, CIB 5;
- Commercial Imagery (1m pan, 4m MSI);
- High-res Imagery

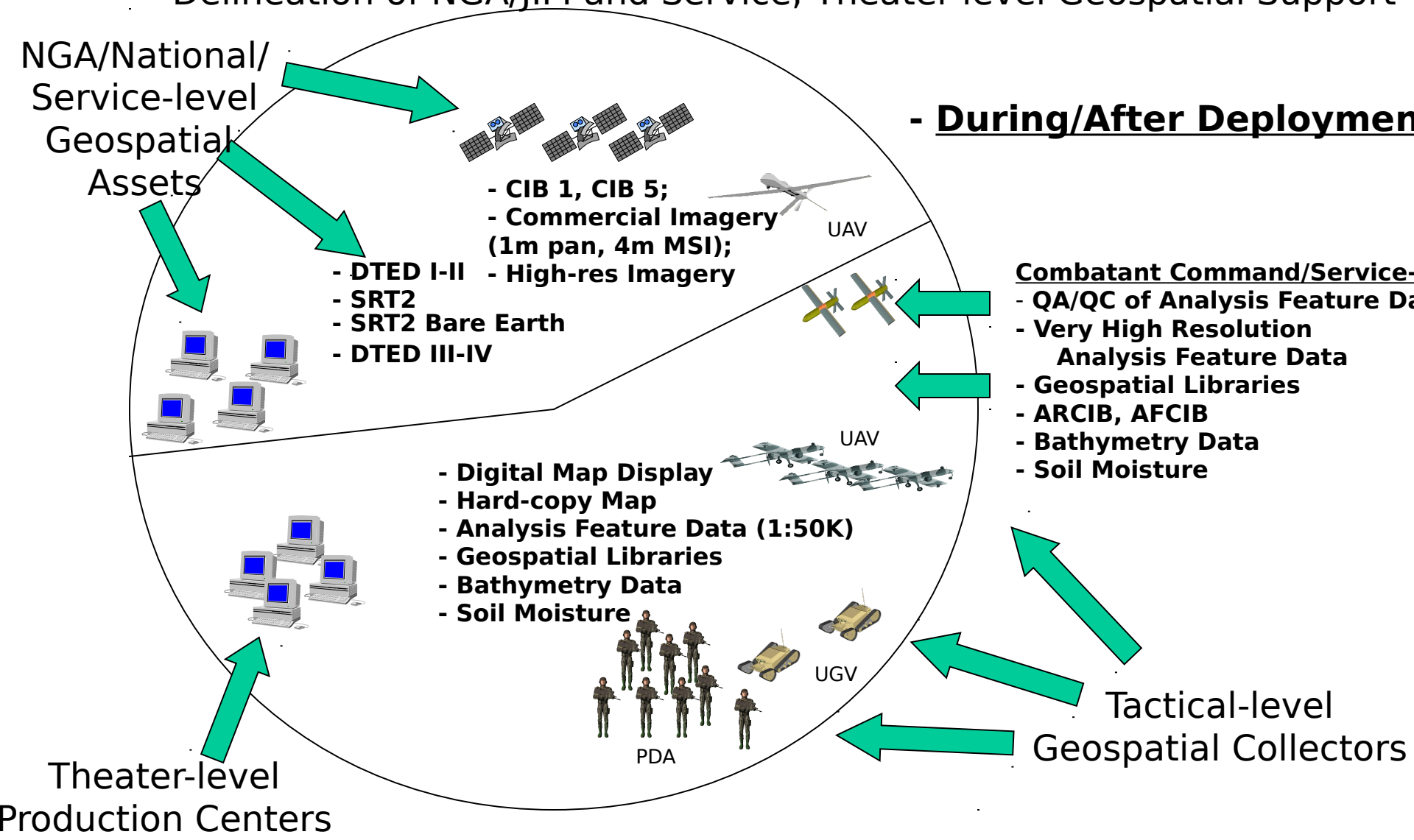
- DTED I-II
- SRT2
- SRT2 Bare Earth
- DTED III-IV



- Digital Map Display
- Hard-copy Map
- Analysis Feature Data (1:50K)
- Geospatial Libraries
- Bathymetry Data
- Soil Moisture

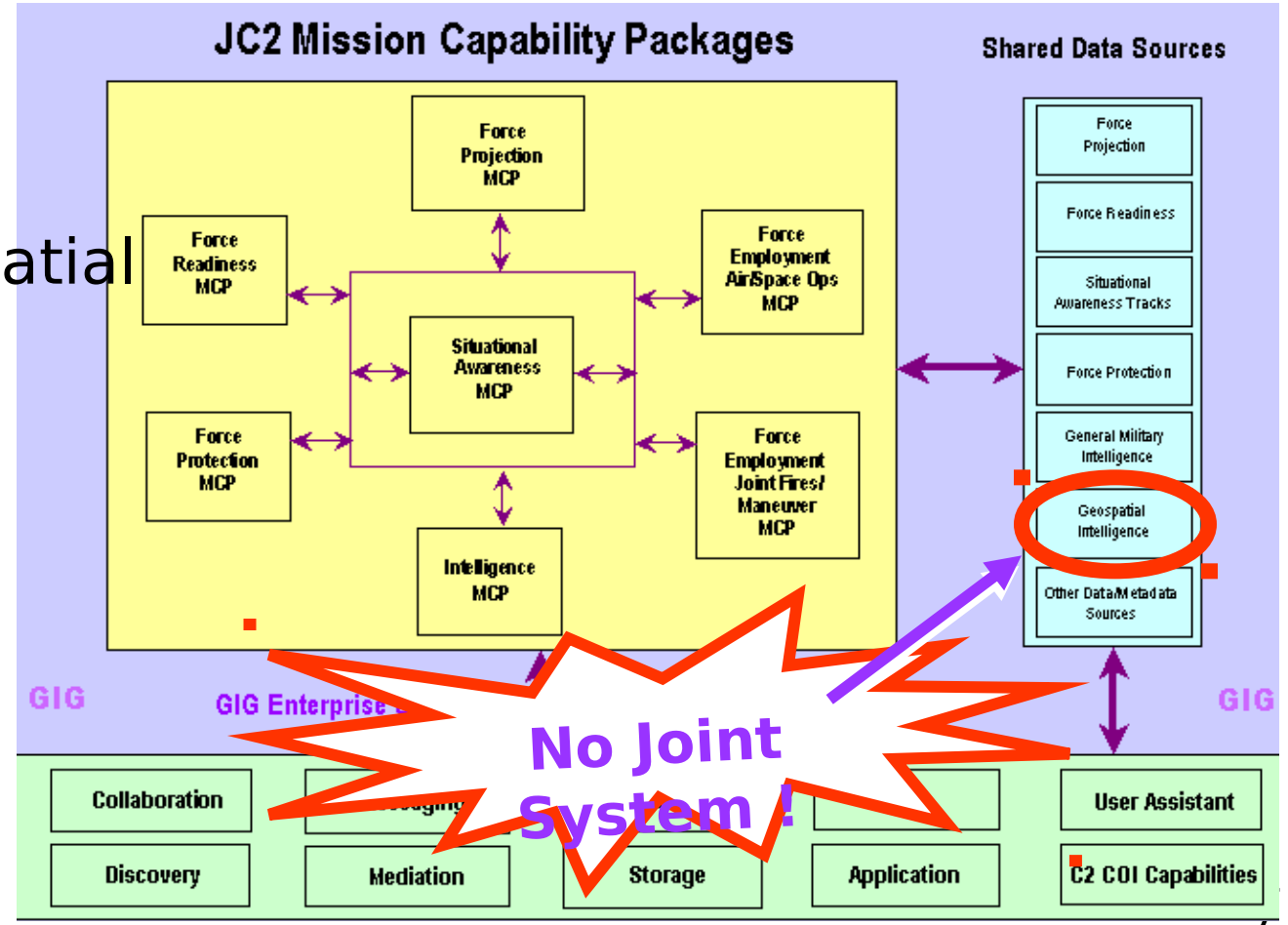
Combatant Command/Service-l
- QA/QC of Analysis Feature Da
- Very High Resolution Analysis Feature Data
- Geospatial Libraries
- ARCIB, AFCIB
- Bathymetry Data
- Soil Moisture

Delineation of NGA/JIM and Service, Theater-level Geospatial Support

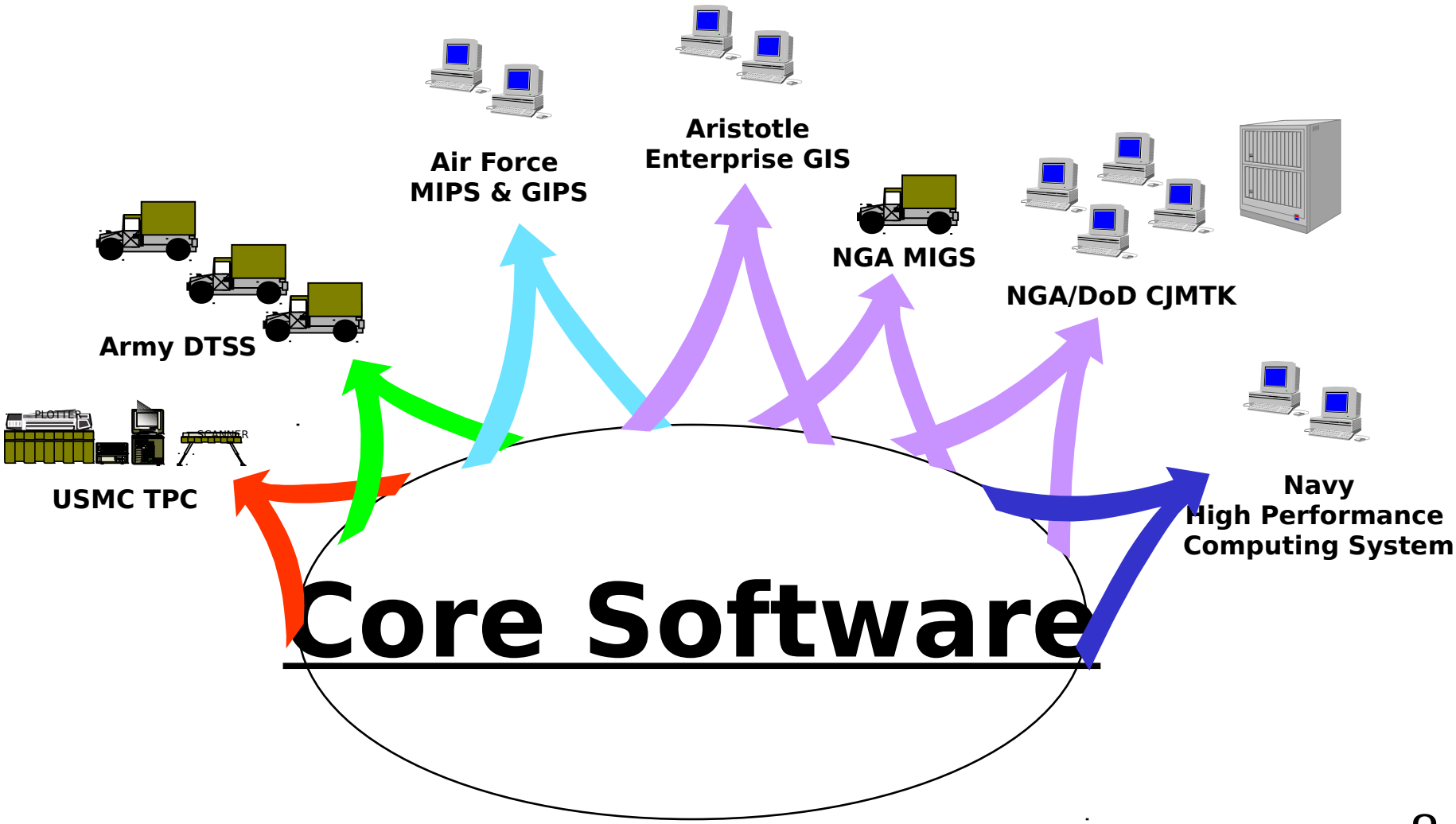


- Why This Is Important -

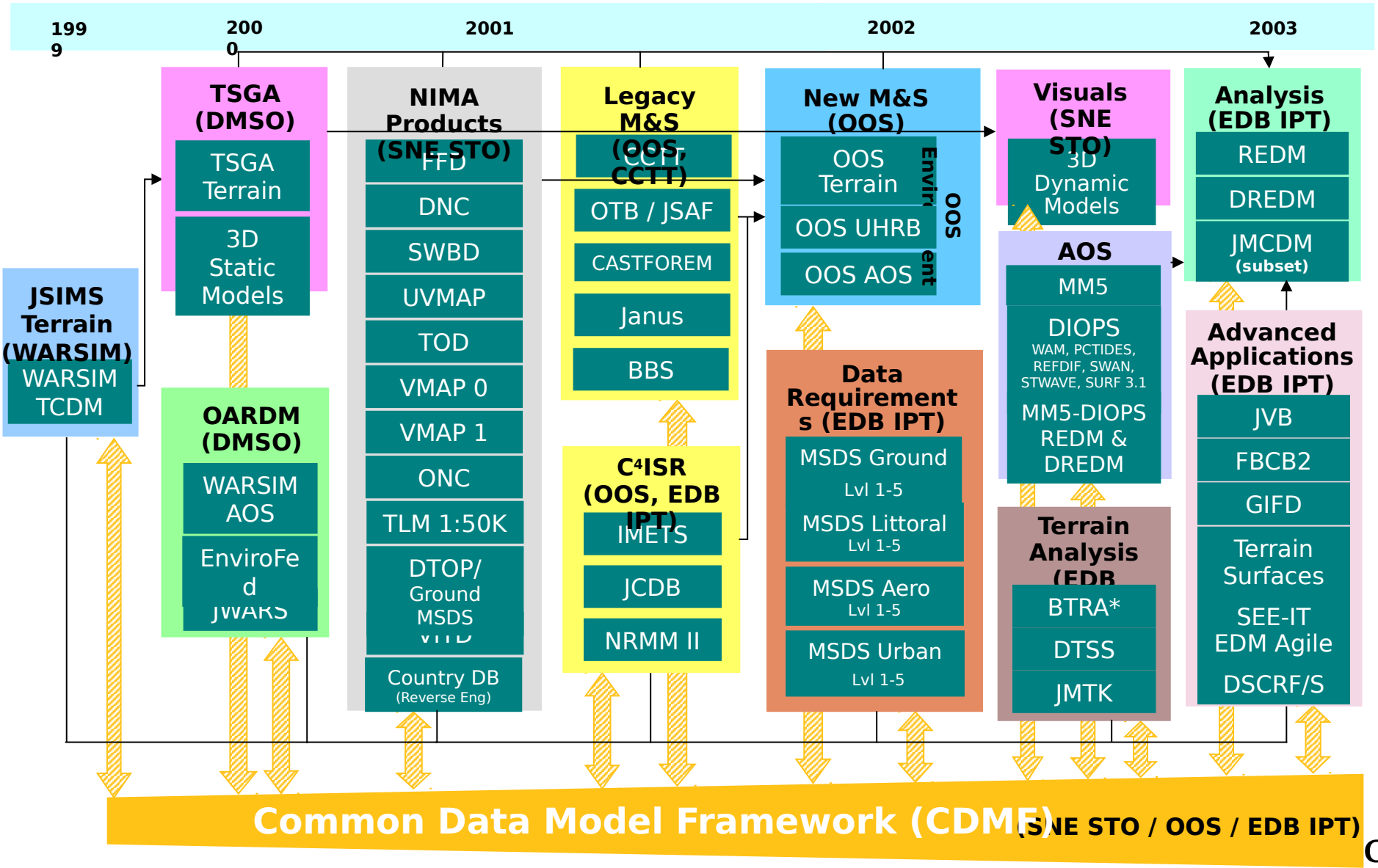
- JC2 and DCGS Will Not Function Without Timely, Accurate, Synchronous & Relevant Geospatial Information



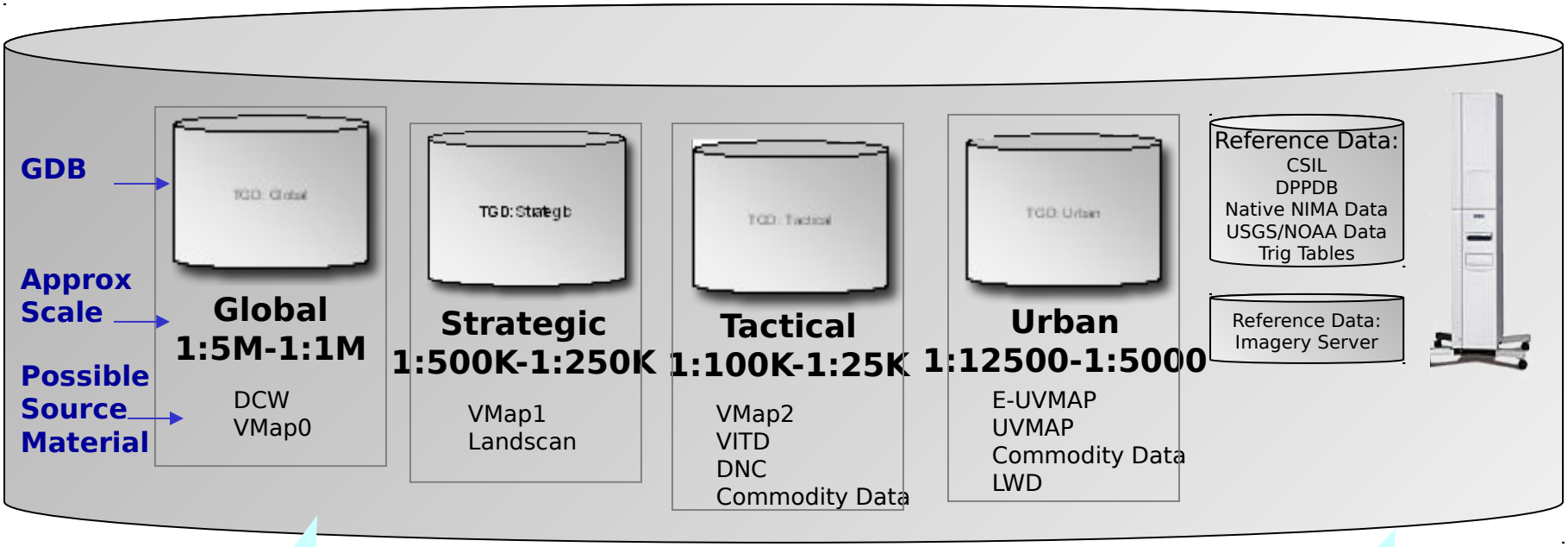
De Facto Systems Architecture; “80%” Commonality



Common Data Model



Common Data Structure



Logical Datasets:

- Aeronautical
- Physiography
- Transportation
- Hypsography
- Hydro
- Population
- Culture
- Boundary
- Utlities

Data Model Inclusions:

- Ground
- Littoral
- Nautical
- Air
- Intelligence

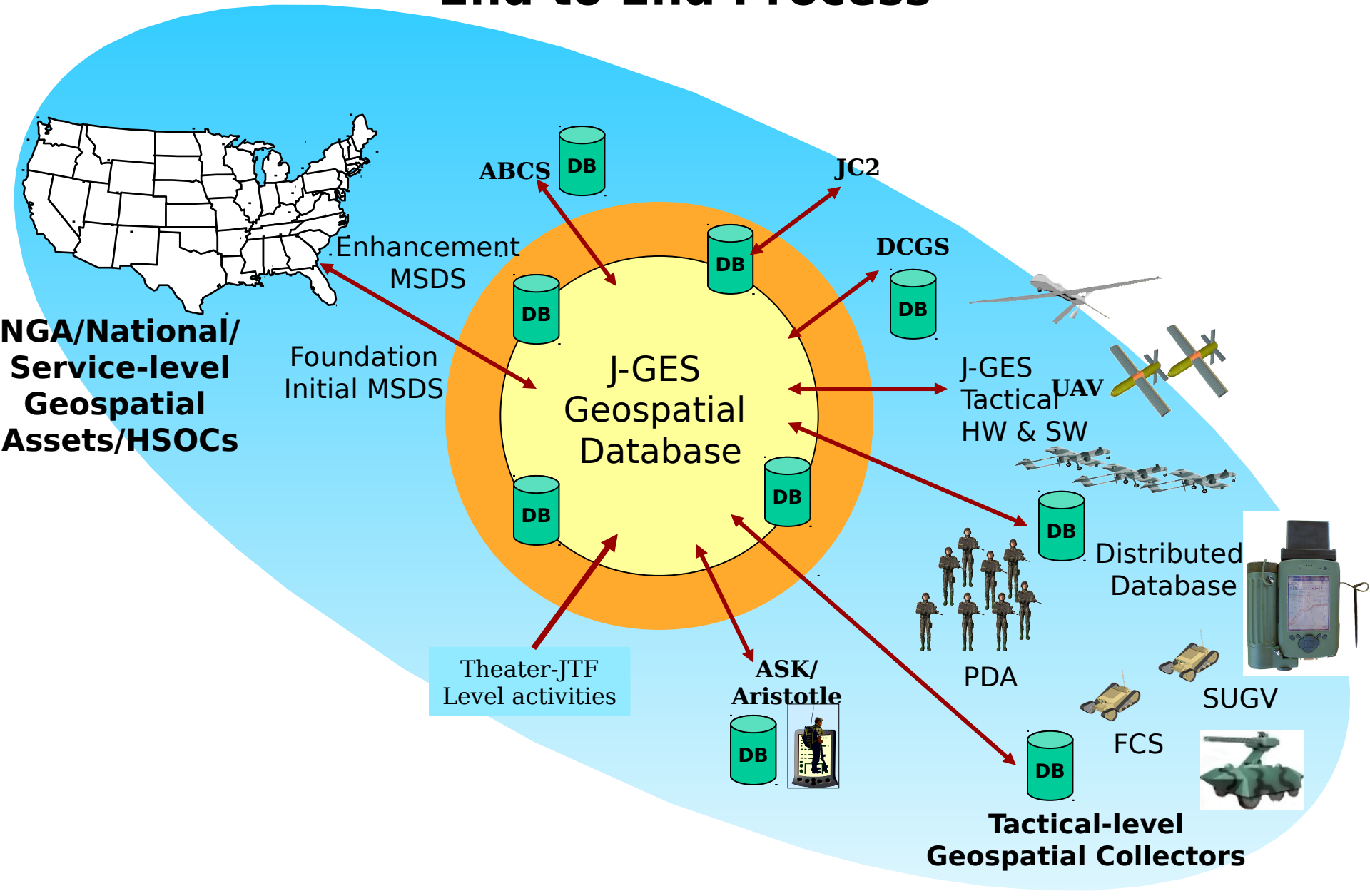
Use of Subtypes:

Example: PolbndL contains

- AdministrativeBoundaryLine
- ArmisticeLine
- CeaseFireLine
- ClaimLine
- DeFactoBoundaryLine
- InternationalDateLine
- InternationalMaritimeBndyLine

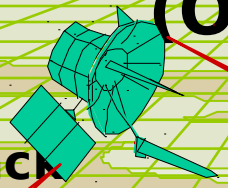
Joint Geospatial Enterprise Service ICD

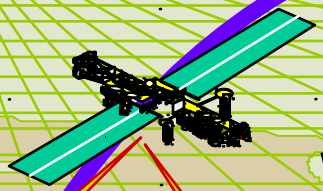
End to End Process



Understand The Battlespace Environment (OV-1)

Detect
Identify
Continuously Track





JC2/DCGS Environment

JCA

MARFOR HQ

SOF HQ

ARFOR HQ

Joint Coalition Commander

Multinational Component HQs

TPC, DTSS, MIGS

Local Civil Authorities

AFFOR HQ

NAVFOR HQ

Knowledge Centers

GAs, NGOs, PVOs

Institutional Training Base

Industrial Sustaining Base

NGA

Installations

HSOC DTSS, TPC, MIPS/GIPS

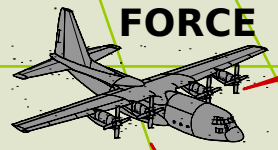
UN/Allies

Joint and Service Title 10 USC

Global Information Grid (GIG)

XX
Division and above Command
Joint or Service based

AIR FORCE



TPC, DTSS

The Geospatial Foundation for JC2 and DCGS

Command & Control
Imagery
Weather Data
Reachback Capability
Early Warnings
ISR

ARMY

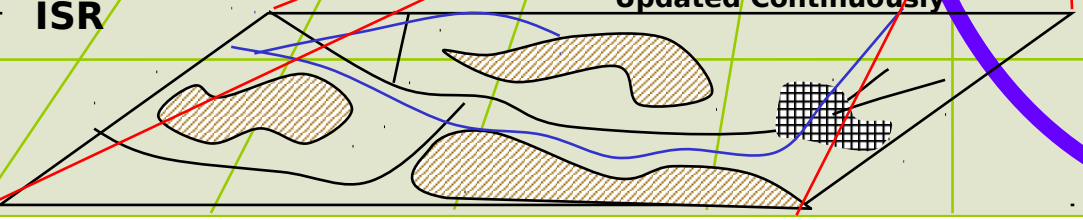
X
Tactical Forces

NAVY

MARINE

DTSS

Joint Mobility COP
Updated Continuously



SOF

UAV

D Update JP 2-03 & FM 3-34.230 to emphasize the vertical and horizontal data flow and Service based Coproduction

O Review Organizational design to reflect changing missions.

T Data Base Management takes on new importance

M ICD and follow on CDD will require evolutionary and revolutionary changes to current materiel solutions

L Knowledge based operations, with full visibility of the COP

P TS Clearances for 21U

F Co production, HSOC, FEF

Timeline

5 Dec - JFCOM determines Joint interest and establishes J8 and Army as co leads
2 Feb - Joint WG announcement and draft ICD sent to JBMC2 BoD members
17-19 Feb - Joint WG to refine GMADGD ICD
24 Feb - Briefed JBMC2 BoD
16 Mar - 1st Data Call for updates
2 APR - ICD submitted to Army and Joint review
16 APR - 2nd Data Call for updates
16 APR - ICD submitted for Release to ABCA Partners
21 Apr - JBMC2 BoD endorses ICD

WG Participants:

USJFCOM J8, J3/4, J7, J9, USA, USN, USAF, USMC, TRADOC, ACC, AFC2ISRC, CFFC, NETWARCOM, MCCDC, TPIO-TD, TEC, NGA, and DISA

Way Ahead

Plan of attack:

- **JBMC2 BoD endorsed ICD and recommend forwarding J-GES ICD into the JCIDS process with the Command and Control Functional Capability Board (FCB) as lead**

- **Complete Service and Joint Staffing**

- **Concurrently socialize with BA FCB, N-C FCB, DoD Interoperability Senior Review Panel (ISRP), and NGA**

Additionally:

- **Clear document for foreign disclosure to ABCA allies**
  - **Will work with other NATO allies once JROC approved**

ENGINEER TOPOGRAPHIC FORCE STRUCTURE REDESIGN

APPROVED FDU (ADJUSTMENTS)

26 May 04

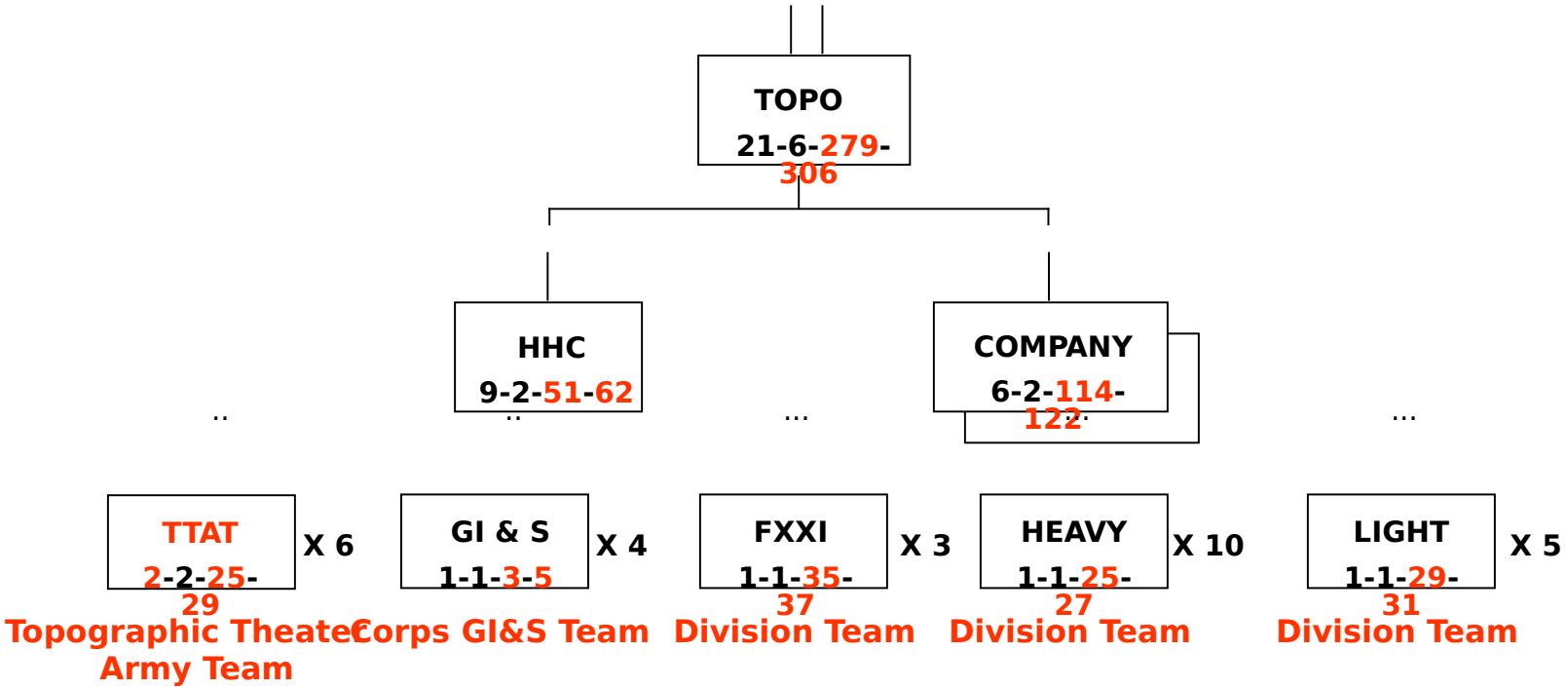
ENGINEER TOPOGRAPHIC REDESIGN

Requirements

- **Design does not exceed the 1,164 personnel cap.**
- **Design fixes all of the deficiencies within Topographic structure.**
- **Will be able to perform a 24 hour operation**
- **Design not only supports the Interim Force but with minor changes would meet the Objective Force requirements.**

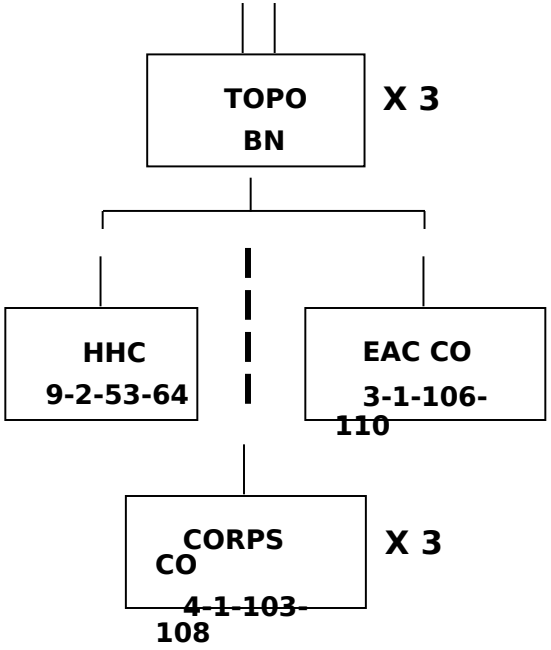
ENGINEER TOPOGRAPHIC REDESIGN

TOPOGRAPHIC BATTALION WITH 2 CO's



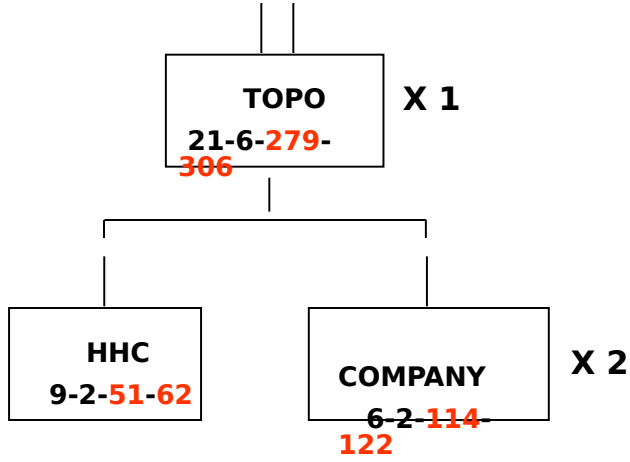
ENGINEER BATTALION REDESIGN

CURRENT



CONCEPT

- **One C2 HQ's with Planning Cells at ASCC & Corps.**
- **HHC design remains the same; however, the HHC is capable of supporting two theaters when coordinating and planning exceeds the companies capabilities.**
- **Company provides modular designs (data management and generation, printing, survey, and terrain) that can be deployed as a platoon or squads.**
- **One company per theater will support corps and EAD as well as provide reinforcement to the divisional teams, if required.**
- **There will be a reduction of two battalions & 5 companies.**
  - **Personnel savings will be used to increase the size of the planning, GI&S, and**



TOPOGRAPHIC THEATER ARMY TM (HSOC)

- **Current structure provides limited planning and coordinating capabilities with the number of personnel and equipment assigned. Coordination between Tm & Bn has had limitations.**
- **Approved design provides sufficient personnel & equipment to meet the ASCC Cdr's requirements.**
  - **LTC, Topographic Engr, is the theater's geospatial engineer who coordinates with HHC, company, and the GI&S.**
  - **DTSS-B – gives this unit the capabilities to generate terrain data, analyze terrain data, prepare decision graphics, image maps, 3rd terrain perspective views, press ready color separates for map substitutes, map updates, tactical decision aids, and intelligence preparation of the battlefield overlays.**
- **Team can operate on a 24 hour basis**

CURRENT

PLANNING
3-1-7-11

X 6

1 – DTSS-D

Approved

TTAT
3-2-24-29

X 6

CONTROL
2-1-4-7

DATA MGMT/GEN
0-1-21-22

1 – DTSS-B

2 – DTSS-D

Corps GI & S Team

CURRENT

One MAJ assigned to SES, En Brigade, Corps

X 4

CONCEPT

- **Major is Corps Topographic Engineer**
- **Corps Hq's has permanent team assigned.**
- **Maintains close operation with the Planning Cell, Company, and divisional teams/detachments.**
- **Tm identifies, consolidates, and submits the corps geospatial data & digital terrain data requirements.**
- **Team can operate on a 24 hour basis**

APPROVED

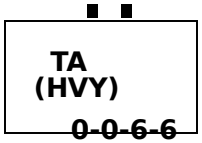
GI&S
1-1-3-5

X 3 or 4

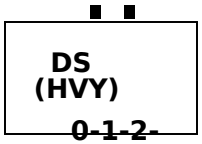
1 – DTSS-D

Division Team (HVY)

CURRENT



X 10



X 10

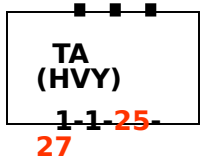
1 – DTSS-L

1 – DTSS-D

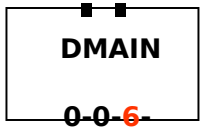
CONCEPT

- **Combined two terrain teams into one detachment.**
- **Sufficient personnel and equipment to support the division Hq's, DMAIN, TAC and each hvy maneuver bde.**
- **Added a Detachment Commander (1LT) so the Geospatial Tech can perform his technical duties.**
- **Added a SSG Squad Leader at the Bde Team level due to the technical & leadership requirements.**
- **Detachment Commander will work with the GI&S team at Corps for additional requirements.**
- **Aviation Brigade has no dedicated Bde Team but will obtain support from EAD company, if required.**
- **Can operate on a 24 hr basis**

APPROVED



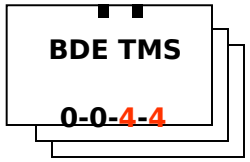
X 10



1 – DTSS-L

1 – DTSS-D

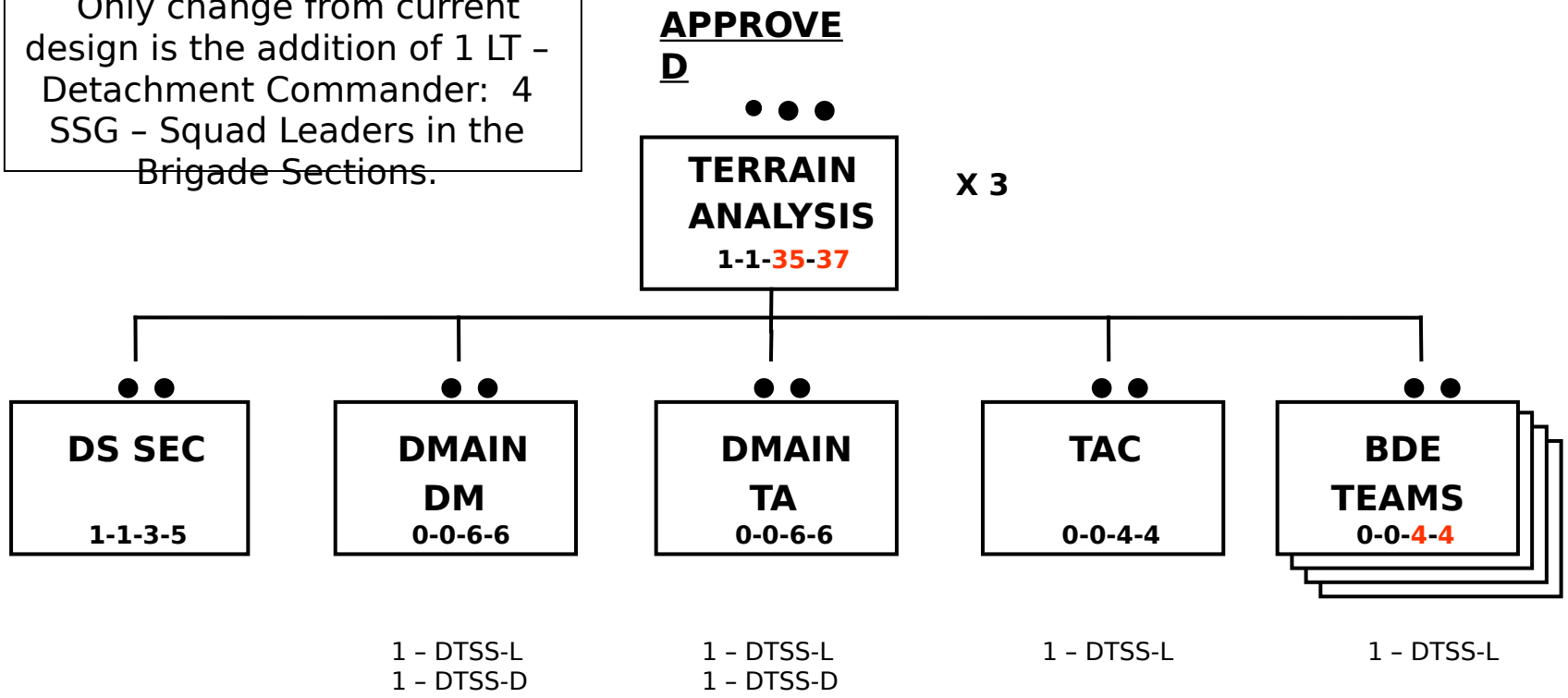
1 – DTSS-L



1 – DTSS-L

Division Team (FXXI)

Only change from current design is the addition of 1 LT – Detachment Commander: 4 SSG – Squad Leaders in the Brigade Sections.



Division Team (LT)

CURRENT

TA (LT) 0-1-8-9

X 6

1 – DTSS-L

4 – DTSS-D

CONCEPT

- **Sufficient personnel and equipment to support the division Hq's, DMAIN, TAC and each maneuver hvy bde.**
- **Added a Detachment Commander (1LT) so the Geospatial Info Tech can perform his technical duties.**
- **Added a SSG Squad Leader at the Bde Team level due to the technical & leadership requirements.**
- **Detachment Commander will work with the GI&S team at Corps for additional requirements.**
- **Can operate on a 24 hr basis**

APPROVED

TA (LT) 1-1-29-31

X 5

DIR SPT 1-1-3-5

DMAIN 0-0-6-6

1 – DTSS-L

1 – DTSS-D

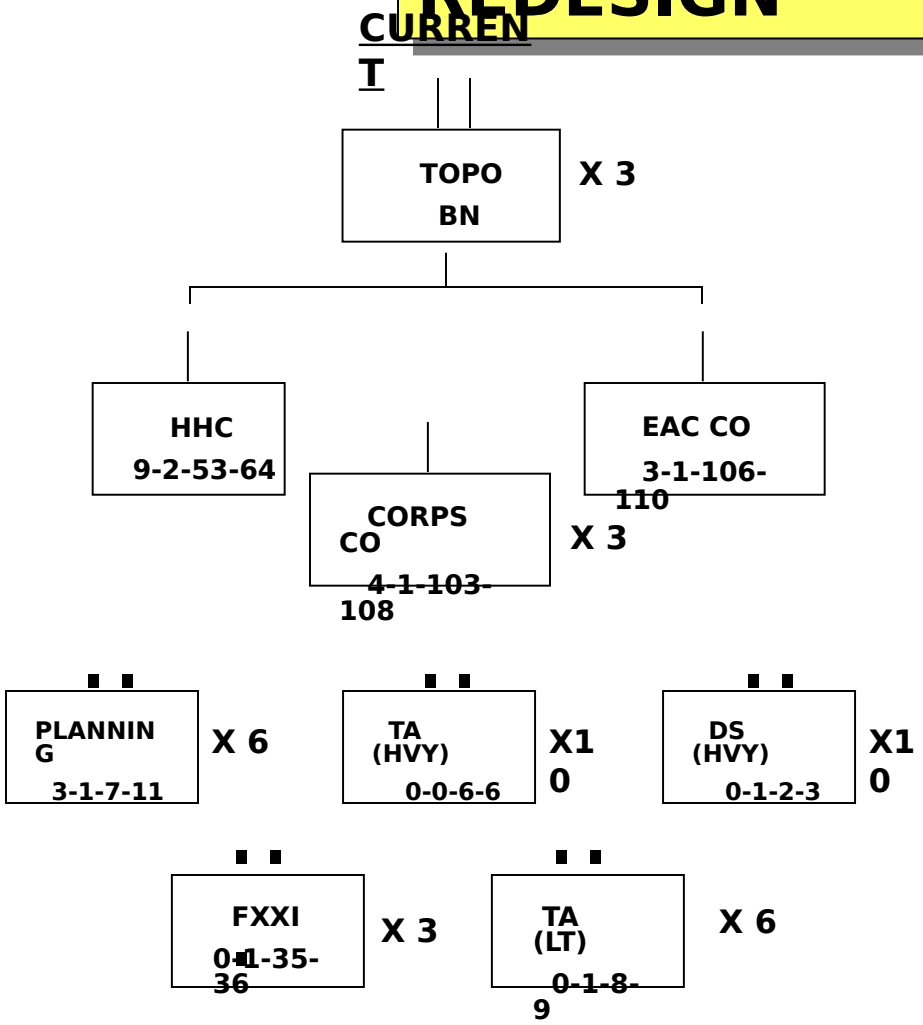
TAC 0-0-4-4

1 – DTSS-L

BDE TMS 0-0-4-4

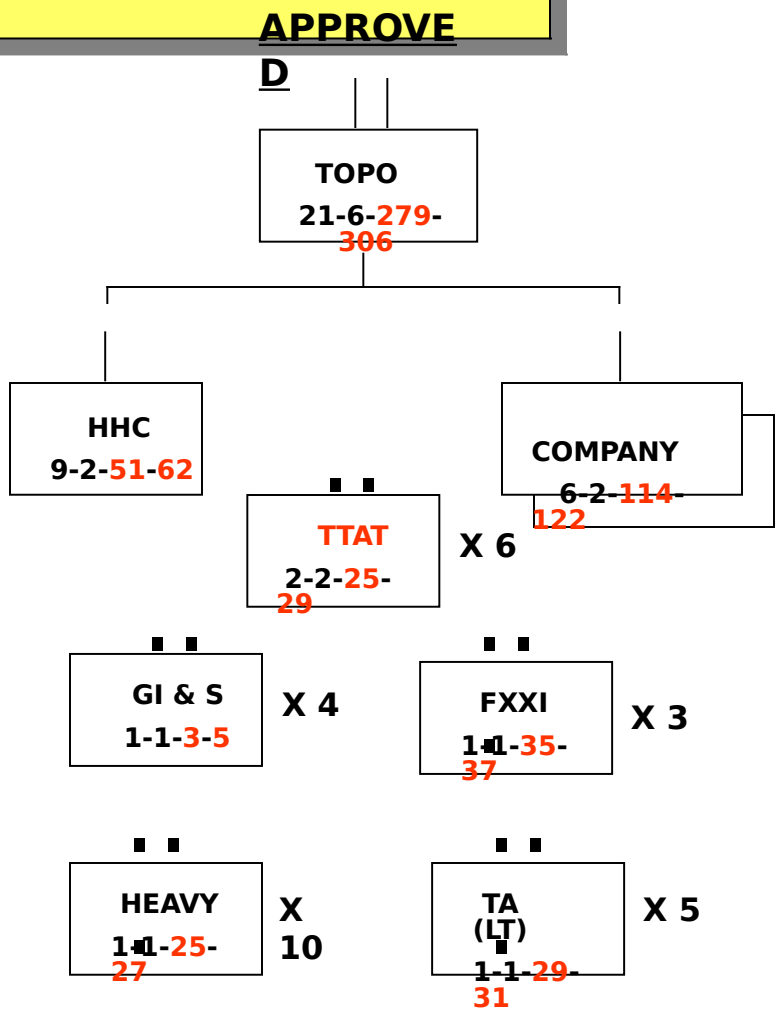
1 – DTSS-L

ENGINEER TOPOGRAPHIC REDESIGN



PERSONNEL

AC	NGL	AR	TOTAL
894	270	0	1,164



PERSONNEL

AC	NGL	AR	TOTAL
756	295	0	1,051

ENGINEER TOPOGRAPHIC REDESIGN

• Doctrine	Major	PF	FM 3-34.230, Topographic Operations and other doctrinal manuals will have to be updated
• Training	Major		Additional training seats will have to be required to meet the increase of MOS 21U
• Leadership requirements	Moderate		All proponents will have to be trained on the new Topographic operational
• Organization be redesigned	Major		All Topographic TOE's will have to
• Material of	Major		There will be an equipment savings approximately $15 million
• Personnel savings bill of 25 spaces. will increase but it should within the Army's guidance.	Major		Increase of MOS 21U. There is a of 138 AC spaces and a NG Promotion pyramid remain

Future Engineer Force

Light Topographic Module

CRITICAL COLLECTIVE TASKS: **Performs analysis, manages, and disseminates topographic information products.**

EFFECTS:

Manage, Analyze, and Distribute GI&S Products for brigade size AO

Provide Mobility Assessment for a brigade or UEx AO.

24-hour operations

SUPPORTS:

Maneuver unit of action, fires brigade, aviation brigade, maneuver enhancement brigade, expeditionary engineer brigade and UEx TAC with management, analysis, and distribution of geospatial data and provide mobility assessments to enable force application and focused logistics.

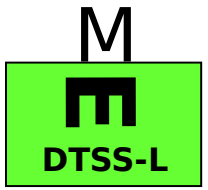
DEPENDENCIES:

Requires geospatial data and higher level products from UEx/UEy Topographic Module

FORCE ALLOCATION RULES:

1 per maneuver unit of action, fires brigade, aviation brigade, RSTA brigade, maneuver enhancement brigade and expeditionary engineer brigade.

1 per UEx HQs



0-0-4-4

1 – DTSS-Light

Personnel

1 –E6 Sr Topo Analyst

1 –E5 Topographic Sgt

2 – EM Topographic Analyst

UEx/UEy Topographic Module

CRITICAL COLLECTIVE TASKS: Perform geospatial analysis. Fuse, conflate, generate, and manage geospatial databases. Disseminating geospatial information products.

EFFECTS:

Generate, Analyze, Manage, and Distribute GI&S Products for a UEx or UEy AO.

Provide detailed terrain analysis for UEx/UEy AO

Manages and updates UEx/UEy geospatial databases

24-hour operations

SUPPORTS:

UEx Main CP or UEy Deployable CP with management, analysis, and distribution of geospatial data and provide mobility assessments to enable force application and focused logistics.

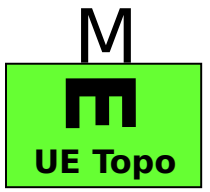
DEPENDENCIES:

Requires geospatial data and theater level products from a HSOC/RCC DMG module or UEy GCM Module

FORCE ALLOCATION RULES:

1 per UEx HQs

1 per UEy HQs



0-1-11-12

1 – DTSS-Light

2 – DTSS-Deployable

Personnel

1 – WO3 Geospatial Info Tech

1 – E8 Topographic Ops SGT

10 - EM Topographic Analyst

CSC/RCC Data Management and Generation Module

CRITICAL COLLECTIVE TASKS: Collect, generate, conflate, fuse, and manage theater level geospatial databases

EFFECTS:

Generate, Manage, and Distribute Theater Level GI&S Data and Products

Manages and distributes theater GI&S database

Provides theater level terrain analysis for planning

SUPPORTS:

HSOC or RCC HQs with generation, analysis, management, and distribution of geospatial data and provides mobility assessments to enable force application, protection, and focused logistics.

DEPENDENCIES

Requires geospatial data from a UEy GCM module or from NSGI sources.

FORCE ALLOCATION RULES:

1 per CSC

1 per RCC

M

CSC/RCC

2-2-22-26

CONTROL

2-1-2-5

1 – HMMWV

MGMT/GEN

0-1-20-21

1 – DTSS-Base

2 – DTSS-Deployable

TDA – 10 PAX

Topographic Company

MISSION: Provide C2 for the training readiness and employment of topographic modules in support of theater level and HLS topographic operations.

EFFECTS:

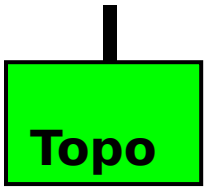
Finish compellation of geospatial data

Print 30,000 map sheet equivalent products per day

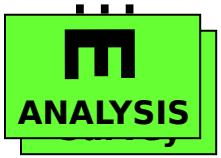
Simultaneously support 6 UEx, 4 UEy & 2 JTF, or 6 FEMA regions with Finish & Print capability.

Simultaneously support 8 FEMA regions, 1 RCC, or 8 Sustainment Bdes with Analysis modules.

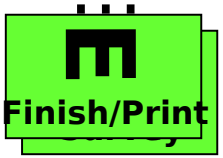
Simultaneously support 1 JOA or 2 FEMA regions with Generation, Collection, and Management.



8-6-182-196



1-1-35-37



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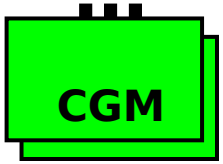
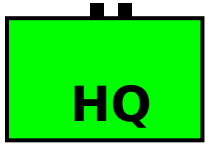
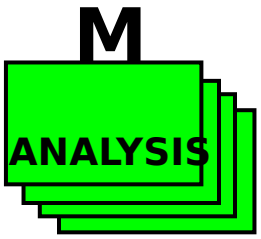


1-1-21-23

4 – DTSS-D
2 – UAV Cl IV
2 – LIDAR Detectors

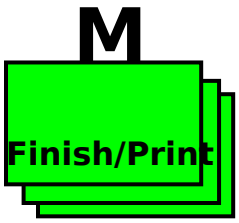


2-0-10-12



0-0-8-8

1 – DTSS-Light
2 – DTSS-Deployable



0-0-9-9

2 – DTSS-HVMP

TDA

1 – DTSS-Base

1 – 10 PAX

FORCE ALLOCATION RULES:

.5 per theater of operation (min); .33 per JTF/JOA, .1 per Sustainment Bde, and .1 per division–sized coalition unit in a JOA.

Topographic Analysis Platoon

MISSION: Provides C2 for the training readiness and employment of assigned augmentation modules. Performs analysis, manages, and disseminates geospatial information products.

EFFECTS:

Analyze and Distribute GI&S Products for a brigade or division sized AO

Provide Mobility Assessment for a brigade or division sized AO

Simultaneously support 4 x brigade sized units or 4 x division HQs, or 4 x FEMA regions

SUPPORTS:

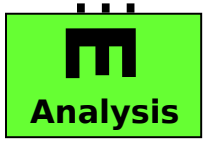
Sustainment brigade with management, analysis, and distribution of geospatial data and provide mobility assessments to enable focused logistics.

JIM brigade sized or division equivalent HQs with management, analysis, and distribution of geospatial data and provide mobility assessments to enable force application or focused logistics.

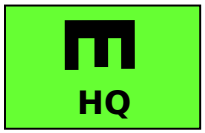
FEMA regions with management, analysis, and distribution of geospatial data to enable protection or consequence management in support of HLS operations.

DEPENDENCIES:

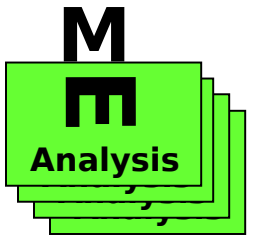
Requires geospatial data and higher level products from UEx/UEy Topographic Module or HSOC/RCC Topographic Module.



1-1-35-37



1-1-3-5



0-0-8-8

1 – DTSS-Light

2 – DTSS-Deployable

FORCE ALLOCATION RULES:

.25 per theater of operation (min); .66 per JTF/JOA, .05 per Sustainment Bde, and .05 per division–sized coalition unit in a JOA.

Topographic Analysis Module

CRITICAL COLLECTIVE TASKS: Perform terrain analysis. Manage and disseminate geospatial information products.

EFFECTS:

Analyze and Distribute GI&S Products for a brigade or division sized AO

Provide Mobility Assessment for a brigade or division sized AO

24-hour operations

SUPPORTS:

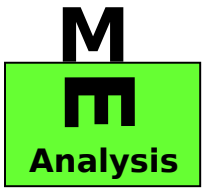
Sustainment brigade with management, analysis, and distribution of geospatial data and provide mobility assessments to enable focused logistics.

JIM brigade sized or division equivalent HQs with management, analysis, and distribution of geospatial data and provide mobility assessments to enable force application or focused logistics.

FEMA regions with management, analysis, and distribution of geospatial data to enable protection and consequence management in support of HLS operations.

DEPENDENCIES:

Requires geospatial data and higher level products from UEx/UEy Topographic Module, GCM Module or HSOC/RCC Module



0-0-8-8

1 – DTSS-Light

2 – DTSS-Deployable

Topographic Finish and Print Platoon

MISSION: **Prints (maps, overlays & special products) hardcopy geospatial information products. Module may support UEx/UEx/JTF HQs with hard copy geospatial products for planning and execution.**

EFFECTS:

Finish compellation of geospatial data

Print 15,000 map sheet equivalent products per day

Simultaneously support 3 UEx HQs

Simultaneously support 2 UEy HQs and 1 JTF/RCC HQs.

Simultaneously support 3 FEMA regions

SUPPORTS:

UEx, UEy, or JTF HQs with finishing and printing of geospatial products to enable force application, protection, and focused logistics.

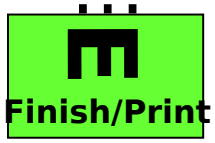
FEMA region with finishing and printing of geospatial products to enable protection and incidence response management during the conduct of HLS operations.

DEPENDENCIES:

Requires conflated geospatial data from a GCM module.

FORCE ALLOCATION RULES:

.25 per theater of operation (min); .66 per JTF/JOA, .05 per Sustainment Bde, and .05 per division–sized coalition unit in a JOA



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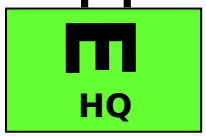
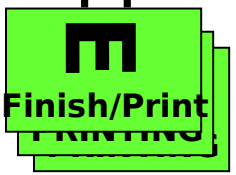


1-1-3-4

2 – HMMWv
2 – ¾ Ton Trlr

M



0-0-9-9

2 – DTSS-HVMP
2 – MTV-LWB
1 – LMTV

Topographic Finish and Print Module

Critical Collective Tasks: **Finish compellation of geospatial data into a printable map/product. Prints (maps, overlays & special products) hardcopy geospatial information products.**

Capabilities:

Finish compellation of geospatial data

Print 5000 map sheet equivalent products per day

24-hour Operations.

SUPPORTS:

UEx, UEy, or JTF HQs with finishing and printing of geospatial products to enable force application, protection, and focused logistics.

FEMA region with finishing and printing of geospatial products to enable protection and incidence response management during the conduct of HLS operations.

Collective Training Dependencies:

Requires conflated geospatial data from a GCM module, NGA, or NSGI.

M

Finish/Print

0-0-9-9

2 – DTSS-HVMP

UEx/UEy/JTF Topographic Collection, Generation, and Management Module

CRITICAL COLLECTIVE TASKS: **Collect topographic data. Generate, conflate, fuse, and manage geospatial data bases. Provide geospatial data/data bases for planning.**

EFFECTS:

Generate, Manage, and Distribute GI&S data and databases

Collects geospatial data with organic assets

Collect, fuse, conflate raw geospatial data into actionable information from multiple sources

SUPPORTS:

24-hour operations

UEx, UEy, or JTF HQs with collection, generation, and management of geospatial databases to enable force application, protection, and focused logistics.

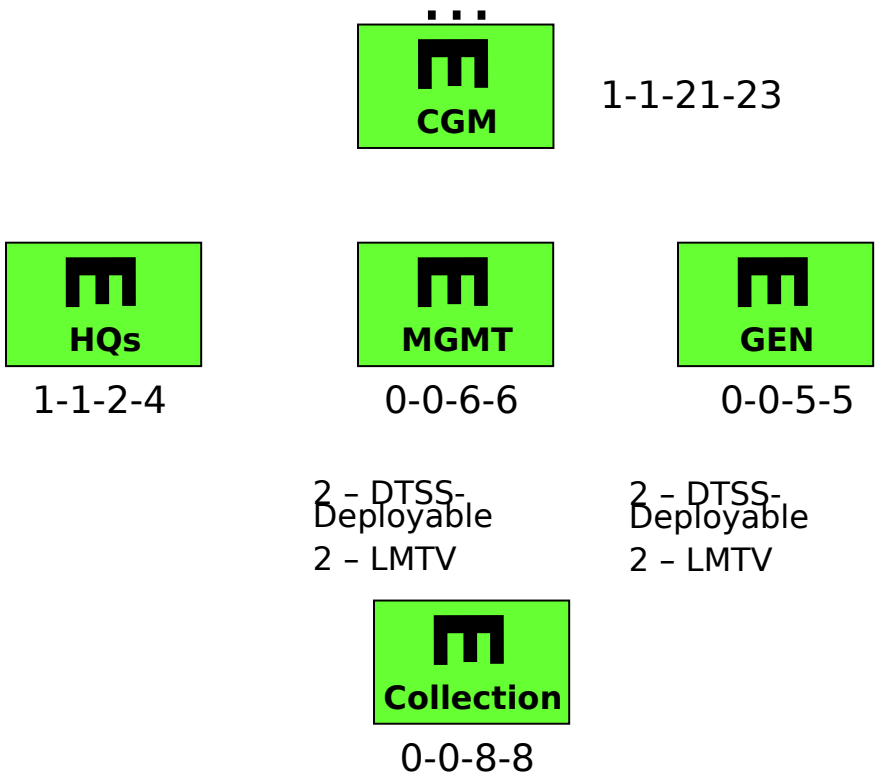
FEMA region with collection, generation, and management of geospatial databases to enable protection and and incidence response management during the conduct of HLS operations.

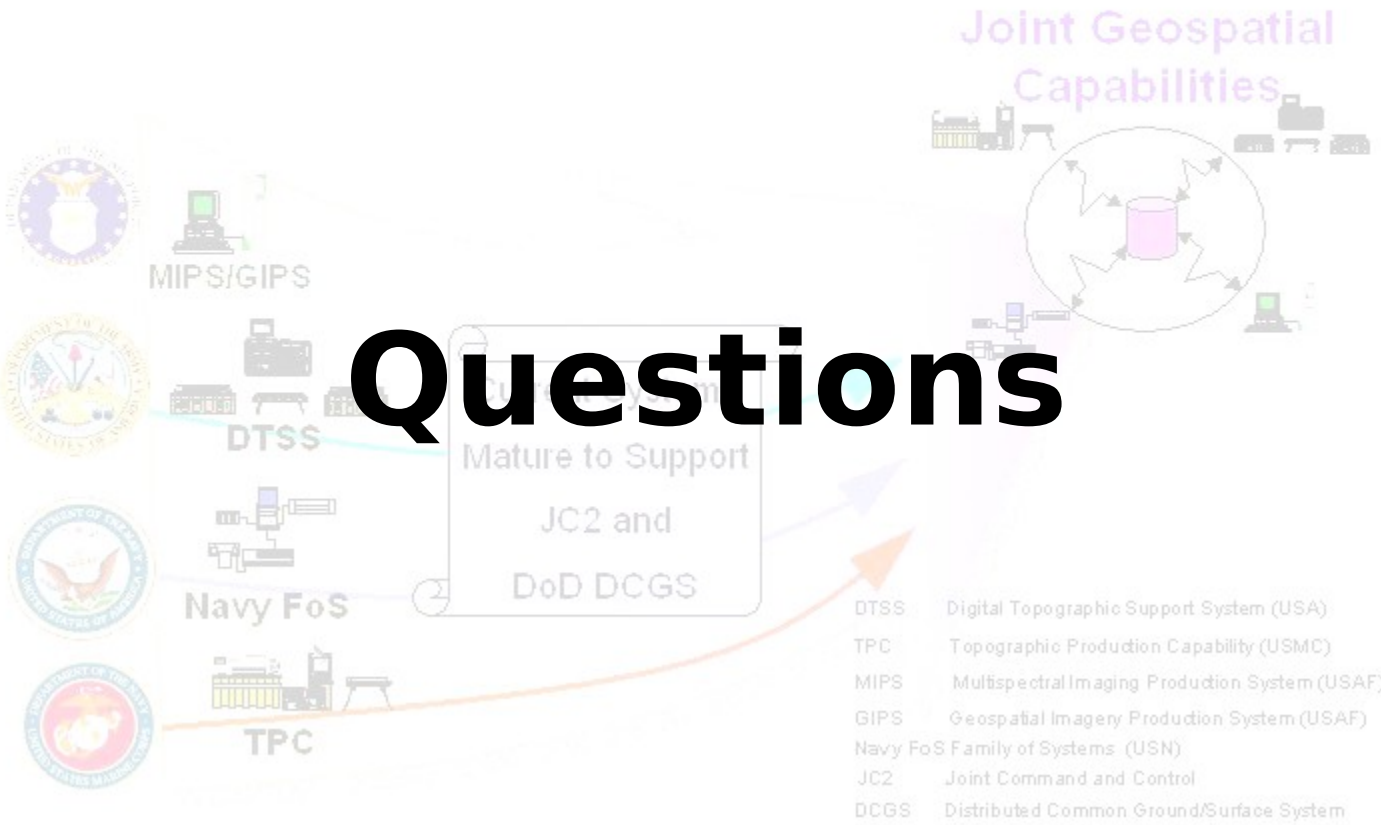
DEPENDENCIES:

Requires geospatial data from NGA.

FORCE ALLOCATION ASSUMPTIONS:

.25 per theater of operation (min); .66 per JTF/JOA, .05 per Sustainment Bde, and .05 per division–sized coalition unit in a JOA




Joint Geospatial Capabilities
MIPS/GIPS
DTSS
Navy FoS
TPC
Mature to Support
JC2 and
DoD DCGS
DTSS Digital Topographic Support System (USA)
TPC Topographic Production Capability (USMC)
MIPS Multispectral Imaging Production System (USAF)
GIPS Geospatial Imagery Production System (USAF)
Navy FoS Family of Systems (USN)
JC2 Joint Command and Control
DCGS Distributed Common Ground/Surface System

Questions